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TRAINING MANUAL · FREE PREVIEW EDITION

Lean Six Sigma Yellow Belt

For contact centers and shared-services centers: seeing performance honestly, understanding variation, finding causes and framing improvements, with worked cases, AI prompt tips and an internal certification path.

Free preview · September 2026

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Disclosure on the use of AI

This manual was drafted with the help of an AI writing assistant. The structure, examples, data and wording were then reviewed, corrected and approved by the human author, who is responsible for its content. Every calculation in the worked examples was re-computed during that review.

About the cases and data

The cases are drawn from real operating challenges the author has worked on in contact centers and shared-service operations. To honor confidentiality agreements, **client names, people and figures have been changed or anonymized**, and the data sets have been rebuilt so they illustrate the method without exposing any client. The company names used (*Cordavelle Contact Center*, *Tellurix Mobile*, *Brinmoor Business Services*) are placeholders. They were checked against public sources and do not refer to any real organization.

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Completing this course, passing the written exam and having a charter and one quick-win improvement reviewed leads to the author's **internal Yellow Belt certification**. It certifies competence inside the sponsoring organization. It is **not** an accredited third-party certification.

How to read the boxes

KEY IDEA

The concept to remember.

TRY IT

A short exercise. The answers are in Appendix E.

WATCH OUT

A common mistake in service operations.

AUTHOR'S FIELD NOTE

A lesson from the author's own work in real operations.

MIND MAPS

The course mind map is the table of contents; each part opens with its own map; each module starts with a small "where you are" map.

Also in every module: an *In plain words* summary, an *AI prompt tip* inside each exercise, *Technical corner boxes* for



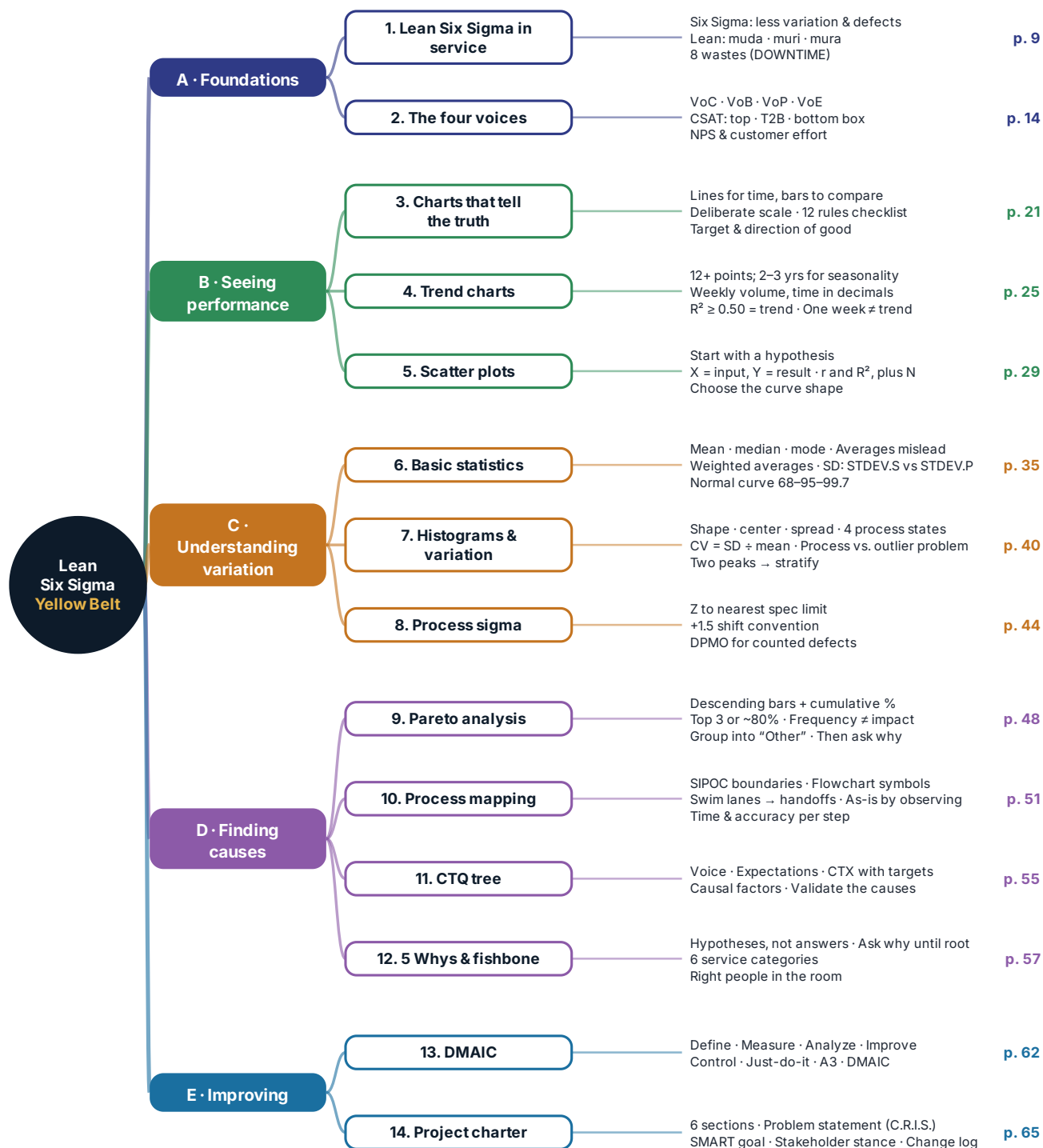
formulas. See the AI study guide.



CONTENTS

Course mind map

All modules in five parts. Page numbers are on the right. The appendices start on page 68.





BEFORE YOU START

Who this is for and how the course runs

Who this is for

Team leaders, supervisors, quality analysts, workforce planners, trainers and operations managers in contact centers and shared-service centers. That includes customer care, technical support, collections, sales, accounts payable and HR services. It also suits anyone who needs to read data correctly and find real problems before trying to fix them.

What you will be able to do

1. Explain what Lean and Six Sigma are, and why generic, factory-style training often fails in service operations.
2. Tell a **process problem** from a **people problem**, and choose the right kind of fix.
3. Use the voice of the customer, business, process and employee to decide where to start.
4. Build charts that are honest and useful. Read trends, correlations and distributions without fooling yourself.
5. Measure variation and capability, and understand why averages mislead.
6. Use Pareto, process maps, CTQ trees and structured brainstorming to find likely causes, and plan the data to confirm them.
7. Frame a problem with DMAIC and write a project charter that a sponsor will approve.

Suggested format

Day	Content	Practice
1	Modules 1–5	Trend and scatter charts built in Excel from the Cordavelle Contact Center data
2	Modules 6–10	Variation analysis, Pareto chart and a process map of your own process
3	Modules 11–14	CTQ tree, fishbone session and a draft charter for a real problem
Written exam	40 questions, 90 minutes, open formula sheet	Pass mark 80% (32 correct)
Project review	A charter and one quick-win improvement in your own area	Scored with the Yellow Belt rubric; internal certificate with a unique ID

THE CASES USED IN THIS MANUAL

Cordavelle Contact Center is a 450-seat multichannel customer-care center (voice, chat, email). It serves **Tellurix Mobile**, a telecom client, on billing, technical support and sales lines. **Brinmoor Business Services** is a back office that processes supplier invoices (invoice-to-pay). The names and numbers are anonymized; the situations are real. Together they cover the two main service settings: *front office*, where the customer waits on the line, and *back office*, where work waits in a queue.



ABOUT THE AUTHOR

Juan Carlos Munguia Salcido is a continuous-improvement consultant and **Lean Six Sigma Master Black Belt** specializing in customer experience, voice-of-the-customer strategy and service excellence in contact-center and shared-service operations. He has led quality, service-excellence and process-improvement teams for global BPO, technology and ride-hailing operations in Mexico and Latin America, designs and coaches improvement programs, and has a degree in Business Psychology (Universidad TecMilenio). He writes the LinkedIn newsletter *CX Hub Excellence Insights*.



BEFORE YOU START · AI STUDY GUIDE

Learning with your own AI study project

Today most of the arithmetic in this manual can be done in seconds by an AI assistant, a spreadsheet. What still needs a trained person is **knowing what to ask, choosing the right tool, checking the answer and deciding what to do**. This guide sets up an AI "study coach" that knows this course, and the rest of the manual gives you a ready-made prompt for every exercise.

HOW THIS MANUAL HELPS YOU USE AI

- **In plain words** boxes open every module.
- Every **Try it** exercise has an **AI prompt tip** you can paste and adapt.
- **Technical corner** boxes hold the formulas: read them to understand, and let the tools calculate.

BEFORE YOU UPLOAD ANYTHING

- Upload only the **study companion** (JC_Munguia_LSS_Yellow_Belt_AI_Study_Companion_EN.txt), not this manual or client files.
- Never paste client names, customer or employee personal data. Anonymize, as this manual does.
- Check the training setting: Claude "Help Improve our AI models"; ChatGPT "Improve the model for everyone"; Gemini "Keep Activity".
- Follow your organization's AI policy. AI can be wrong: verify every number.

1. Create the study project

	Claude · Projects	ChatGPT · Projects	Gemini · Gems
Who can use it	All users; free accounts up to five projects	Signed-in users; files per project: 5 (Free), 25 (Go, Plus), 40 (Pro, Business, Enterprise, Edu)	Google accounts; create and edit Gems in the Gemini web app
Create	Sidebar > <i>Projects</i> (or claude.ai/projects) > + <i>New Project</i> > name it	Sidebar > <i>New project</i> > name, icon and color	Sidebar > <i>Explore Gems</i> > <i>New Gem</i> > name it
Add the companion	+ in project knowledge > upload the .txt file	Add files to the project (or paste text)	<i>Knowledge</i> > upload the file, or <i>Add from Drive</i>
Add instructions	<i>Set project instructions</i> > paste > <i>Save instructions</i>	⋮ > <i>Project settings</i> > paste the instructions	Paste into <i>Instructions</i> > test in the preview > <i>Save</i>
Also possible	—	Custom GPTs, only in Business, Enterprise or Edu workspaces	Gemini Notebook (formerly NotebookLM) for answers grounded in your sources

Menus as described in each vendor's help center in September 2026; labels change often. Save the companion as **.txt**: all three tools accept it. Links in the sources appendix.



2. Paste these project instructions

You are my Lean Six Sigma Yellow Belt study coach for customer-service and shared-services operations (contact centers, and HR, finance and procurement services).

Use the attached study companion as your main source. If something isn't in it, say so and label it as general knowledge.

When I work on an exercise: (1) ask for my own answer or data first; (2) guide me step by step instead of giving the answer straight away; (3) show every calculation so I can check it, and tell me how to do it in Excel or Google Sheets; (4) never invent company data: use placeholders like [monthly volume]; (5) flag any number I should double-check.

Keep answers short and practical, use tables to compare options, and reply in the language I write in.

Remind me not to paste confidential client or personal data. If my data looks sensitive, ask me to anonymize it first.

3. Prompt like a professional

Two formulas cover most needs. **RTF** is quick; **CREATE** is for bigger tasks. Both appear in the prompt tips of this manual.

Formula	Parts	Example
RTF	Role: who the AI should be · Task: exactly what to do · Format: how the answer should look	"You are a workforce analyst. Calculate how many agents we need for 1,800 emails a day at 9 minutes each. Show the steps in a table."
CREATE	Character · Request · Examples · Adjustments and constraints · Types of output · Evaluation (how to judge a good answer)	Used for charters, FMEAs, X-matrices and change plans, where context and quality criteria matter.

Patterns worth knowing

- **Flipped interaction:** "Ask me questions one at a time until you have enough to...". Best when you don't know all the steps.
- **Iterative refinement:** start broad, then add context and constraints in the next prompts.
- **Prompt chaining:** break a big task into a sequence of small prompts.
- **Check the math:** "Show every step and the spreadsheet formula so I can verify it."

When the answer is weak

- Add detail and context; remove anything irrelevant.
- Use a formula (RTF or CREATE) and ask for one thing at a time.
- Remove conflicting requests.
- Ask it to cite the module of the study companion it used.
- If it refuses or goes off track, ask it to explain why and suggest an alternative.

The RTF and CREATE formulas and the patterns above follow PMI's "Talking to AI: Prompt Engineering for Project Managers" (2024), adapted here to Lean Six Sigma in service operations. See the sources appendix.

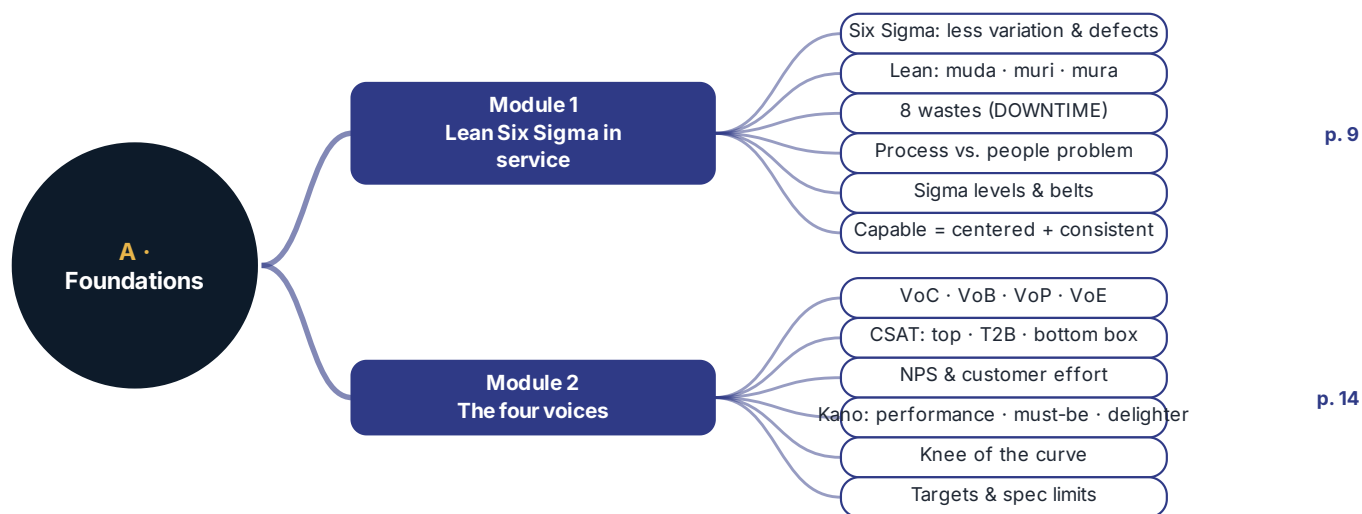


PART A

Foundations

What Lean and Six Sigma mean in a service operation, how to tell a process problem from a people problem, and how the four voices tell you where to start.

PART A · MODULES 1-2



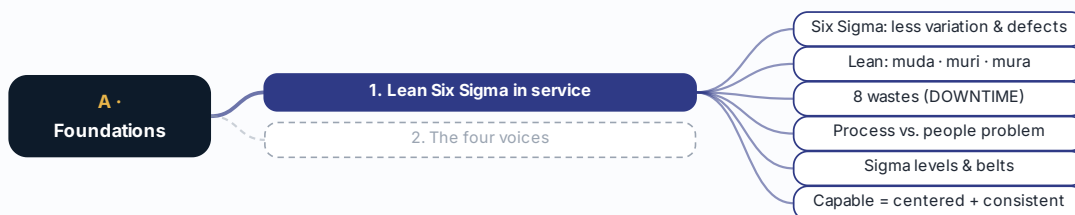


PART A · MODULE 1

Lean Six Sigma in service operations

What these methods are, where they come from, and how to make them work where the "product" is a conversation or a transaction.

WHERE YOU ARE · PART A



IN PLAIN WORDS

Lean removes waste so work flows; Six Sigma reduces variation so results are predictable. In a contact center or shared-services team most gaps come from the process, not the people, so this module teaches you to look at the process first.

1.1 Why bother?

Most service operations already measure plenty. What they lack is a **shared, disciplined way of turning data into decisions**. Lean Six Sigma provides that. It gives teams a common language, a repeatable problem-solving routine, and a habit of checking the data before acting.

When it works, the benefits show up in three places:

- **For the customer or client:** KPIs that are met more consistently, fewer repeat contacts, faster and more accurate outcomes.
- **For the operation:** lower cost to serve, less rework, less overtime, and more capacity from the same headcount.
- **For the organization:** the same method applied across sites, programs and countries, with managers who can defend their decisions with evidence.

1.2 Why generic training often fails in services

Many Lean Six Sigma programs were designed for manufacturing. When they're copied directly into a contact center or shared-service center, three things tend to go wrong:

1. **Tools without translation.** Some advanced tools assume stable, high-volume physical processes. They add little where work arrives unpredictably and is carried out by people in conversations.
2. **Aiming at the wrong level of perfection.** In the author's experience, many service processes run at roughly 1.5–3 sigma today. The first big wins come from getting to about 3–4 sigma on what customers care about, not from chasing 6 sigma everywhere.



3. **Collecting belts instead of results.** Success is measured by improved KPIs that are sustained over time, not by the number of certificates issued.

KEY IDEA

Lean Six Sigma is a **way of managing**, not a one-off project. The goal of this course is to make data-based problem solving part of how you run your team every week.



1.3 Six Sigma in one page

Six Sigma is a disciplined, data-based way to improve performance by reducing **defects** and **variation**. Core belief: *all work is a process, and every process can be defined, measured, analyzed, improved and controlled*. Those words form its routine, **DMAIC** (Module 13).

Era	Milestone
1920s–1950s	Shewhart's statistical process control; Deming spreads data-driven quality management
1980s	Motorola formalizes "Six Sigma" and the belt roles
1990s	Large industrial companies adopt it at scale; financial and other services follow
2000s →	Merges with Lean into Lean Six Sigma; common in shared services, BPO and digital operations

What "sigma" means. Sigma (σ) is the standard deviation (Module 6). A process's **sigma level** is how many σ fit between its average and the nearest limit the customer accepts (tables add 1.5 by convention for long-term drift; see Module 8). More σ means fewer defects.

Sigma	Defects per million (DPMO)	Defect-free	Typical in service
2	308,538	69.1%	Unmanaged processes
3	66,807	93.3%	A realistic first goal
4	6,210	99.38%	Very good for most service KPIs
5	233	99.977%	Critical, regulated steps
6	3.4	99.9997%	Safety-critical only

Uses the conventional 1.5-sigma long-term shift; full table in Appendix A.

The belt roles

Belt	Role	In plain words: what they typically lead
Yellow Belt CURRENT COURSE	Reads and presents data correctly, spots real problems, joins improvement teams	Improvements inside one small-to-medium team : a queue, a shift or a team of 10–25 people
Green Belt	Leads DMAIC projects in their own area with statistical and Lean tools	A larger team, a whole department or a client program , e.g. a 150-seat line of business or an AP team
Black Belt	Leads complex cross-area projects, coaches Green Belts, links projects to strategy	Full accounts, sites, regions or the organization's project portfolio
Master Black Belt	Designs and runs the improvement program; trains and certifies Black Belts; sets method and standards	The improvement system across several business units, countries or organizations , including building the program itself



1.4 Process problems vs. people problems

A **business process** is a series of repeatable steps aimed at a defined outcome. Hiring, training, scheduling, answering a billing question and paying an invoice are all processes. A process is **capable** when it does two things at once:

- it performs **consistently** (low variation), and
- it hits its **target** (it is centered).

The most expensive habit in service operations is treating every performance gap as an individual's fault. A simple test helps:

A FEW PEOPLE MAKE THE ERROR

It's likely an **individual** issue. Coaching, feedback and follow-up usually work.

MANY PEOPLE MAKE THE SAME ERROR

It's likely a **process** issue. Coaching everyone one by one won't fix it. Change the system.

System-level levers include the hiring profile, training design, knowledge-base content, desktop tools, policies, incentives, how supervisors spend their time, removing the reason for the contact altogether, and self-service or automation.

CASE · CORDAVELLE

Quality monitoring showed that 38% of evaluated billing calls missed the "explain the prorated charge" step. The first reaction was a coaching campaign for 140 agents. Instead, a supervisor checked the knowledge article: it described proration in four screens of text. After it was rewritten as a one-screen visual with a script line, the miss rate fell to 9% in three weeks, with no extra coaching hours.

1.5 Lean in one page

Lean comes mainly from the Toyota Production System. It focuses on removing everything that consumes time and effort without adding value for the customer. Toyota named three enemies:

Term	Meaning	Service example
Muda	Waste: activity that adds no value	Re-keying the same customer data into three systems
Muri	Overburden: unreasonable load on people or systems	Scheduling 95% occupancy for weeks at a time
Mura	Unevenness: workload that swings up and down	A month-end invoice spike created by the billing cycle

The eight wastes in service operations

A common memory aid is **DOWNTIME**:



Waste	Contact center example	Shared-service / back-office example
Defects	Wrong answer that causes a repeat contact	Invoice posted to the wrong cost center
Overproduction	Daily reports that nobody reads	Processing requests before they are approved
Waiting	Customers on hold while the agent waits for a supervisor	Invoices waiting days for a purchase-order match
Non-used talent	Experienced agents' ideas never collected	Analysts doing copy-paste instead of analysis
Transport (handoffs)	Transfers between queues	Documents emailed back and forth between teams
Inventory	Email and case backlog	Work-in-progress in shared mailboxes
Motion	Switching between 6 screens to find one answer	Searching folders for supporting documents
Extra processing	Verifying identity three times in one call	Two people approving low-value, low-risk payments

TRY IT · 1.1

List the three wastes that cost your team the most time each week. For each one, estimate the hours per week and name the *process* that creates it, not the person.

AI PROMPT TIP · FLIPPED INTERACTION

Act as a Lean coach for my [contact center / shared-services] team. Help me find the three wastes that cost us the most time each week, using the 8 wastes (DOWNTIME) in my study companion. Ask me five questions about our daily work, one at a time, before you answer. Then give me a table: waste · example from my process · estimated hours per week · the process step that creates it (never a person).

AUTHOR'S FIELD NOTE · ATTRITION IS A PROCESS, TOO

In one contact center I supported, attrition had spiraled, and the first instinct was to blame "the new generation" of hires. We treated it as a process problem instead. We fixed the **hiring profile** by adding behavioral interviews and role-plays to screening. We also rebuilt **onboarding**: a proper introduction to the company, detailed training and a buddy for every new hire. Turnover came down, and job satisfaction and team cohesion went up. The fix was in the system, not in the people.

MODULE 1 TAKEAWAYS

- Lean Six Sigma is a disciplined, data-based way of managing, not a one-time event.
- In services, aim first for consistent 3–4 sigma performance on what customers value.
- A capable process has low variation **and** is centered on target.
- When many people make the same error, fix the process, not the people.
- Lean removes waste (muda), overburden (muri) and unevenness (mura). Use DOWNTIME to spot the eight wastes.

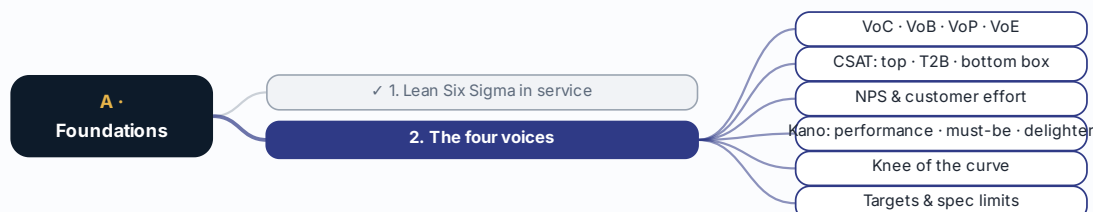


PART A · MODULE 2

The four voices and what customers value

Before improving anything, decide what "better" means and for whom.

WHERE YOU ARE · PART A



IN PLAIN WORDS

Before improving anything, listen to four voices: the customer, the business, the process and the employee. Kano's model tells you which measures to maximize and which only need to be good enough.

2.1 The four voices

Every improvement decision balances four sources of truth. Listening to only one of them is how operations end up optimizing the wrong thing.

Voice	What it tells you	How to capture it
Customer (VoC)	Expectations, preferences, pain points, satisfaction and dissatisfaction. In outsourced services there are two customers: the client company and its end users.	Post-contact surveys (CSAT, NPS, effort), complaints, speech and text analytics, client scorecards and business reviews
Business (VoB)	Financial and strategic goals: revenue, cost, margin, growth, risk, contract penalties	Budget, strategic plan, client contract, market benchmarks, audit findings
Process (VoP)	What the process actually delivers: its stability, variation and capability	Operational reports, process maps, capability analysis, process audits, frontline feedback
Employee (VoE)	Engagement, skills, workload, attrition risk, ideas	Engagement surveys, exit interviews, skip-level meetings, quality and skills checks

KEY IDEA

Durable improvement starts with the Voice of the Customer but is sized and prioritized with the other three. A fix that customers love but the business can't afford, the process can't sustain, or employees can't deliver will not last.



2.2 Measuring the voice of the customer

Customer satisfaction (CSAT) on a 5-point scale

The usual question is "How satisfied were you with...?", answered from 1 (very dissatisfied) to 5 (very satisfied). A single average hides the story, so read three numbers:

Reading	Calculation	What it signals
Top box	% answering 5	Loyalty and advocacy potential
Top-two box (T2B)	% answering 4 or 5	Overall satisfaction, the usual contract KPI
Bottom box	% answering 1 (some programs use 1–2)	Dissatisfaction and churn risk

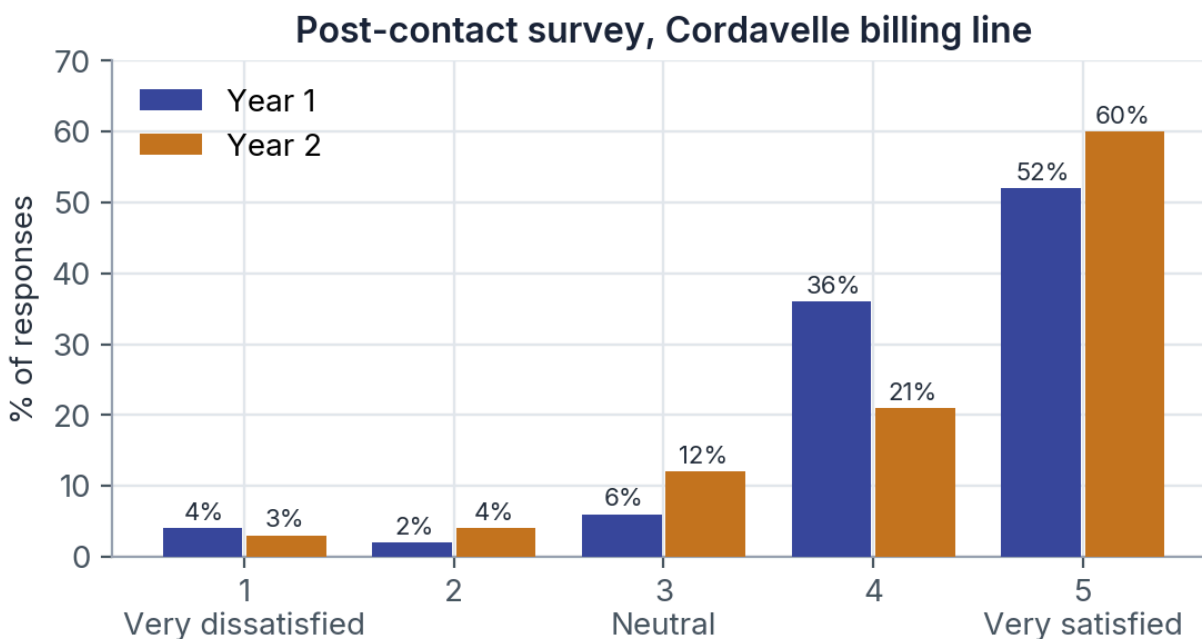


Figure 2.1. T2B fell from 88% to 81%, which looks like a decline. But top box *rose* from 52% to 60%, and the score of 1 fell from 4% to 3%. But scores of 2 rose from 2% to 4%, so the 1–2 bottom box rose from 6% to 7%. Customers moved out of "satisfied" in both directions. The next question is who became neutral, and why.

WATCH OUT

Never manage with T2B alone. Always track top box and bottom box next to it, and set reference points for all three from your own baseline and your client's contract.



AUTHOR'S FIELD NOTE · ONE METRIC NEVER TELLS THE WHOLE STORY

As quality and service-excellence manager for a ride-hailing platform's customer service, I pushed the team to look past the headline CSAT. We analyzed satisfaction and dissatisfaction separately, and **dissatisfaction fell markedly even while CSAT fluctuated**. On a BPO account I managed, high CSAT and top box looked like "everyone is happy". Splitting loyalty, satisfaction and dissatisfaction by segment revealed customers who were loyal *despite* being dissatisfied, and we targeted their specific pain points. Across driver and passenger segments, CSAT rose about 15% in six months.

Net Promoter Score (NPS)

Question: "How likely are you to recommend [company] to a friend or colleague?", answered 0–10.
Promoters answer 9–10, passives 7–8 and detractors 0–6.

Technical corner · $NPS = \% \text{ promoters} - \% \text{ detractors}$ e.g. $42\% - 27\% = +15$

NPS ranges from –100 to +100. Published benchmarks vary widely by industry, country and survey method, so compare against your own trend first and against external benchmarks only when the method matches.

Customer effort

Customer-effort measures ask how easy it was to get the issue handled, typically as agreement with a statement such as "The company made it easy for me to handle my issue" on a 7-point scale. Research published in the *Harvard Business Review* (Dixon, Freeman & Toman, 2010) argued that reducing effort predicts loyalty better than trying to "delight" customers. In practice, effort points straight at process fixes: repeat contacts, transfers, and asking for the same information twice.

2.3 Not every attribute works the same way

Noriaki Kano showed that customer requirements behave in different ways. That changes how you should manage each one. (Kano's full model also has "indifferent" and "reverse" attributes; this course uses the three that matter most day to day.)

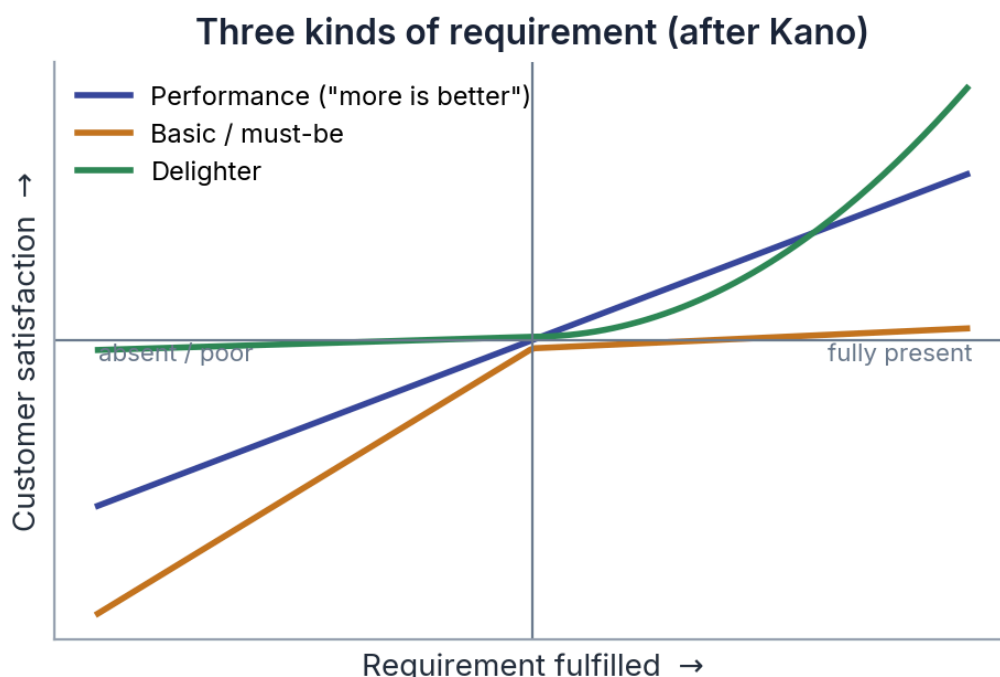


Figure 2.2. Three kinds of requirement.

Type	Behavior	How to manage it	Typical service examples
Performance ("more is better")	Every improvement raises satisfaction	Maximize	Issue resolved; accurate answer
Basic / must-be	Poor performance angers customers; above "good enough", extra effort adds little	Reach the acceptable level and hold it; don't over-invest	Wait time, handle time, courtesy, clear communication, empathy
Delighter	Unexpected; pleases when present, not missed when absent	Use selectively once the basics are met	Proactive follow-up, surprise credit, personalized tip

KEY IDEA

A common and expensive mistake is managing a *must-be* as if it were "more is better": pushing courtesy scores or speed of answer ever higher. Cost rises and satisfaction doesn't. Put that effort into **resolution and accuracy** instead.

2.4 Finding the knee of the curve

For must-be attributes, the goal is to find the point where more investment stops paying off. Plot the attribute against satisfaction and look for where the curve flattens.



Figure 2.3. In this program, CSAT drops sharply when fewer than about 72% of calls are answered within 30 seconds. Above that, faster answering adds cost but not satisfaction. Every operation has its own knee, so find yours with your own data.

A **key-driver analysis** does this for many attributes at once. It relates each survey attribute to overall satisfaction and ranks them by impact. At Cordaville, one such analysis showed that "resolved on first contact" and "clear explanation of the bill" explained most of the variation in CSAT. "Agent used my name", which leadership had been coaching heavily, explained almost none.

2.5 From voices to targets and specification limits

- A **target** is a single line: at or better than it is acceptable, worse is not. It works in either direction: higher is better for FCR, lower is better for abandon rate.
- **Specification limits** define an acceptable *range*: a lower spec limit (LSL) and/or an upper spec limit (USL). Anything outside the range is a **defect**.
- Set both by balancing **VoC** (what customers notice) with **VoB** (what it costs).

CASE · SETTING A SERVICE-LEVEL RANGE

Using Figure 2.3, Cordaville set a lower limit of **72%** in 30 seconds, because below it satisfaction drops. It set an upper limit of **82%**, because above it staffing cost rises with no customer benefit. Days outside 72–82% count as defects on *both* sides: too slow hurts customers, too fast wastes money. Must-be attributes often need both limits.

For "more is better" KPIs, once a target is met consistently, **raise it**. That is continuous improvement written into the scorecard.

TRY IT · 2.1

Take your team's scorecard. Label each KPI as *performance*, *must-be* or *delighter*. Which must-be KPIs are you currently pushing as "more is better"?



AI PROMPT TIP · RTF

Role: You are a customer-experience analyst.

Task: Classify each KPI in my scorecard as a Kano performance, must-be or delighter attribute, and tell me which must-be KPIs I'm wrongly pushing as "more is better". My KPIs: [list them].

Format: a table with KPI · Kano type · why · target approach (maximize, or hold at the knee).

MODULE 2 TAKEAWAYS

- Use all four voices. Start from the customer, then size and prioritize with the business, process and employee voices.
- Read CSAT as top box, T2B and bottom box. Use NPS and effort as complements.
- Maximize performance attributes such as resolution and accuracy. Hold must-be attributes such as speed and courtesy at their "knee".
- Targets and spec limits turn voices into a definition of a defect.

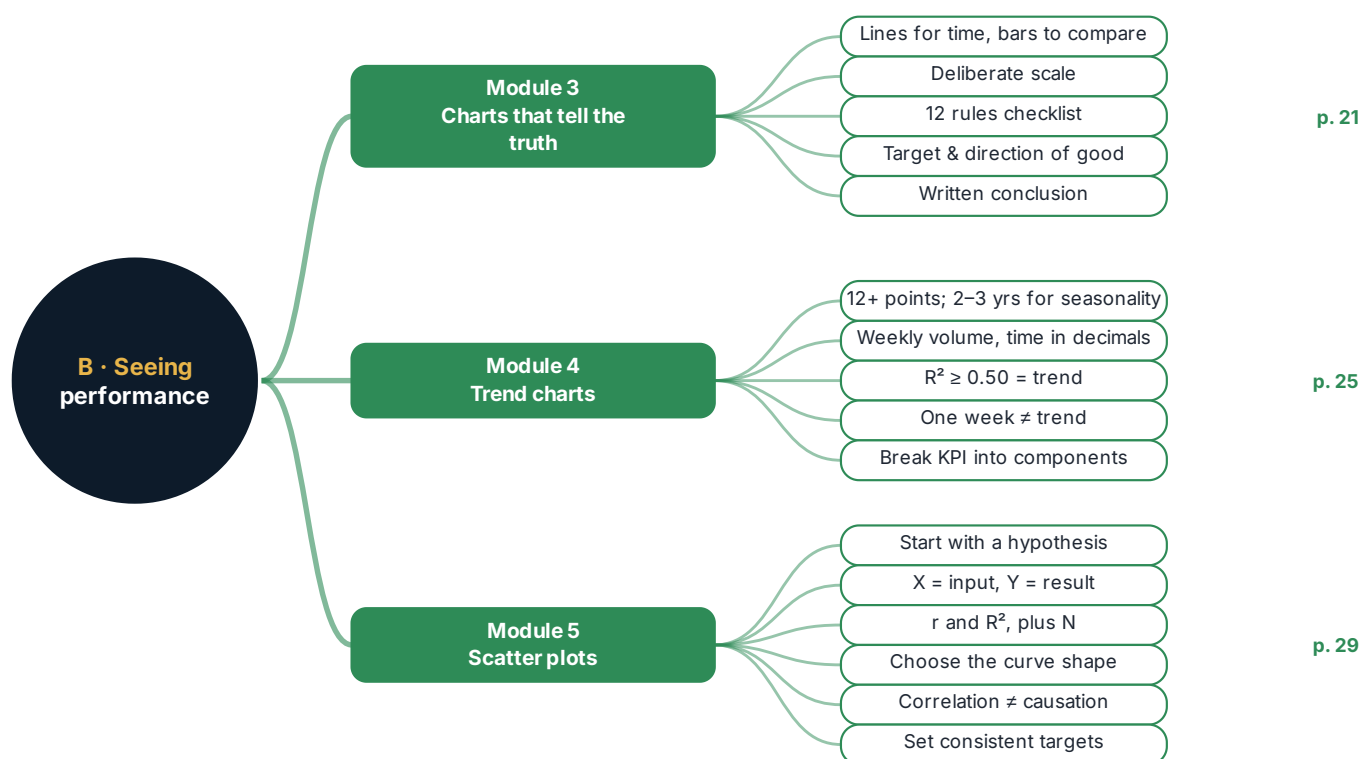


PART B

Seeing performance

Charts that tell the truth: honest design, trend charts and scatter plots, so you read your KPIs without fooling yourself.

PART B · MODULES 3-5



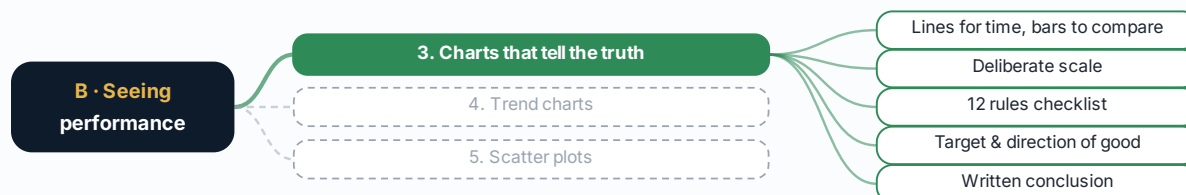


PART B · MODULE 3

Charts that tell the truth

Charts get forwarded and pasted into decks without you there to explain them. They have to stand on their own.

WHERE YOU ARE · PART B



IN PLAIN WORDS

A chart should let a busy manager see the truth in five seconds: the right chart type, an honest scale, the target, and a one-sentence conclusion.

3.1 Choosing the right chart

Question you're answering	Chart	Module
How has performance moved over time?	Trend (line) chart	4
How do teams, sites or queues compare right now?	Bar chart	3
Are two measures related?	Scatter plot	5
How are individual results spread?	Histogram	7
Which few causes produce most of the problem?	Pareto chart	9

Two rules cover most mistakes: **use lines for time, and bars for comparing entities**. A bar chart of twelve months hides the trend. A line connecting five different teams invents a trend that doesn't exist.

3.2 Choosing the scale

The scale is the most frequent way charts mislead, usually by accident. The rule: **don't hide real variation, and don't create variation that isn't there**.

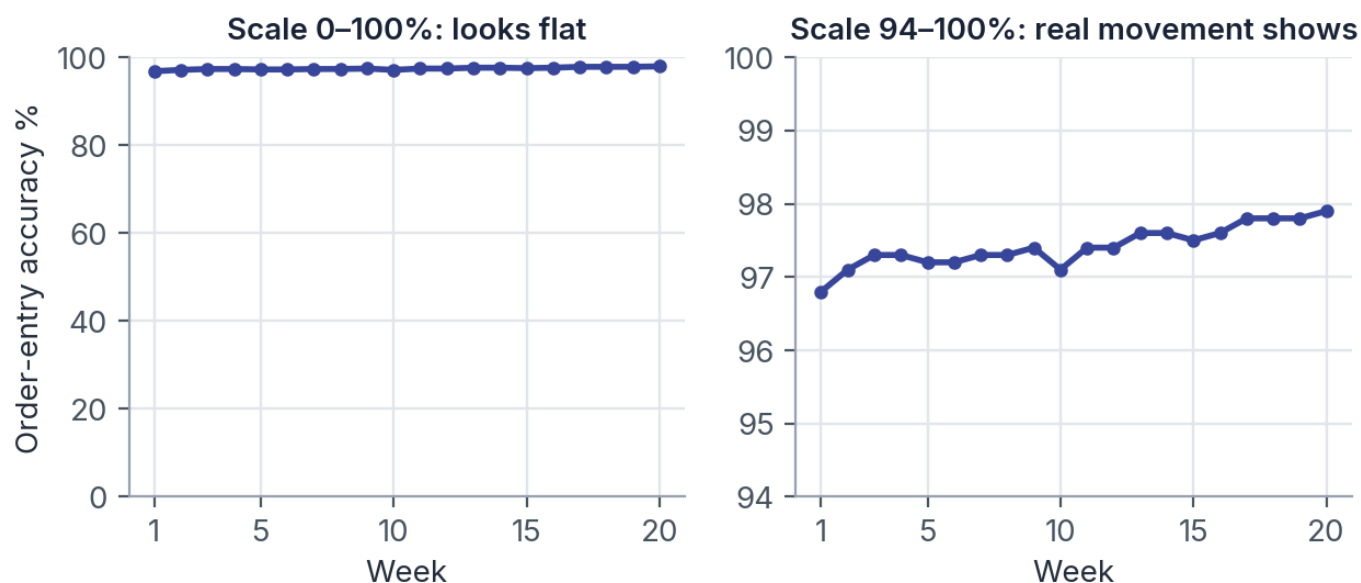


Figure 3.1. The same 20 weeks of accuracy data. On a 0–100% scale the line looks flat and nothing seems to need attention. On 94–100% the real swings show.

- Don't accept the software's automatic scale, and don't default to 0–100% or to the min–max of the data.
- Choose the gridline step by **what matters to the business**: 1 point for accuracy or compliance, 2–5 points for service level or CSAT.
- Aim for roughly 6–10 gridlines. Use a tight scale when the target is tight, and a wider one when performance is far from target.
- Use the **same scale** for the same KPI across teams, queues and sites, so charts can be compared side by side.



3.3 Twelve rules for a self-explaining chart

#	Rule	How
1	Informative title	Entity + metric + period, e.g. "Team B – schedule adherence – Jan-Dec"
2	Deliberate scale	Section 3.2
3	Labeled axes	Say what is plotted and in what units
4	Visible lines	Lines thick enough to survive a projector or a phone screen
5	Readable text	Nothing smaller than the body text of the document it will live in
6	Enough data	About 12+ points for a trend; 2–3 years to discuss seasonality
7	Target or spec limits shown	As a labeled line on the chart
8	Events annotated	A short note on unusual points (policy change, outage, holiday)
9	Direction of good	"↑ better" or "↓ better", especially when lower is better
10	Legend placed well	Or label the lines directly, so the plot area isn't squeezed
11	A written conclusion	What the chart shows, what was decided, and the next step
12	No decoration	No 3-D, background pictures or rainbow colors

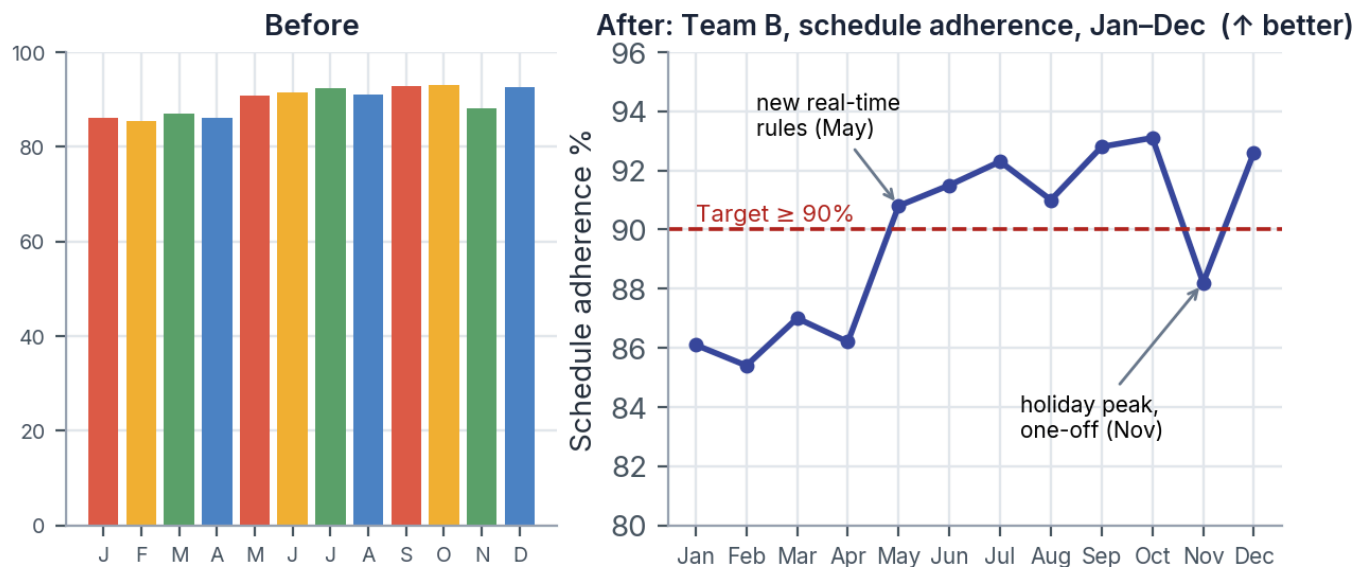


Figure 3.2. The same data twice. *Before*: a colorful bar chart with a 0–100 scale, no title and no target. *After*: the target, the direction of "good", and the two events that explain the movement. **Conclusion written under the chart:** "Adherence has stayed above target every month since the May real-time rules, except the one-off November holiday peak. No action needed."

TRY IT · 3.1

Take the last chart you sent to your manager. Score it against the 12 rules. Fix the three rules it breaks worst, and add a one-sentence conclusion.

AI PROMPT TIP · CREATE



Character: a strict data-visualization reviewer.

Request: score my chart against the 12 rules in Module 3 of my study companion.

Examples: [upload a screenshot of the chart, with numbers blurred if confidential].

Adjustments: the audience is a senior manager with five seconds to read it.

Types of output: pass/fail for each rule, the three worst problems, and a one-sentence conclusion to write under the chart.

Evaluation: explain each failed rule in one line.

MODULE 3 TAKEAWAYS

- Lines for time, bars for comparing entities.
- Choose the scale on purpose, based on what matters to the business.
- A good chart carries its own title, target, events, direction of good and conclusion.



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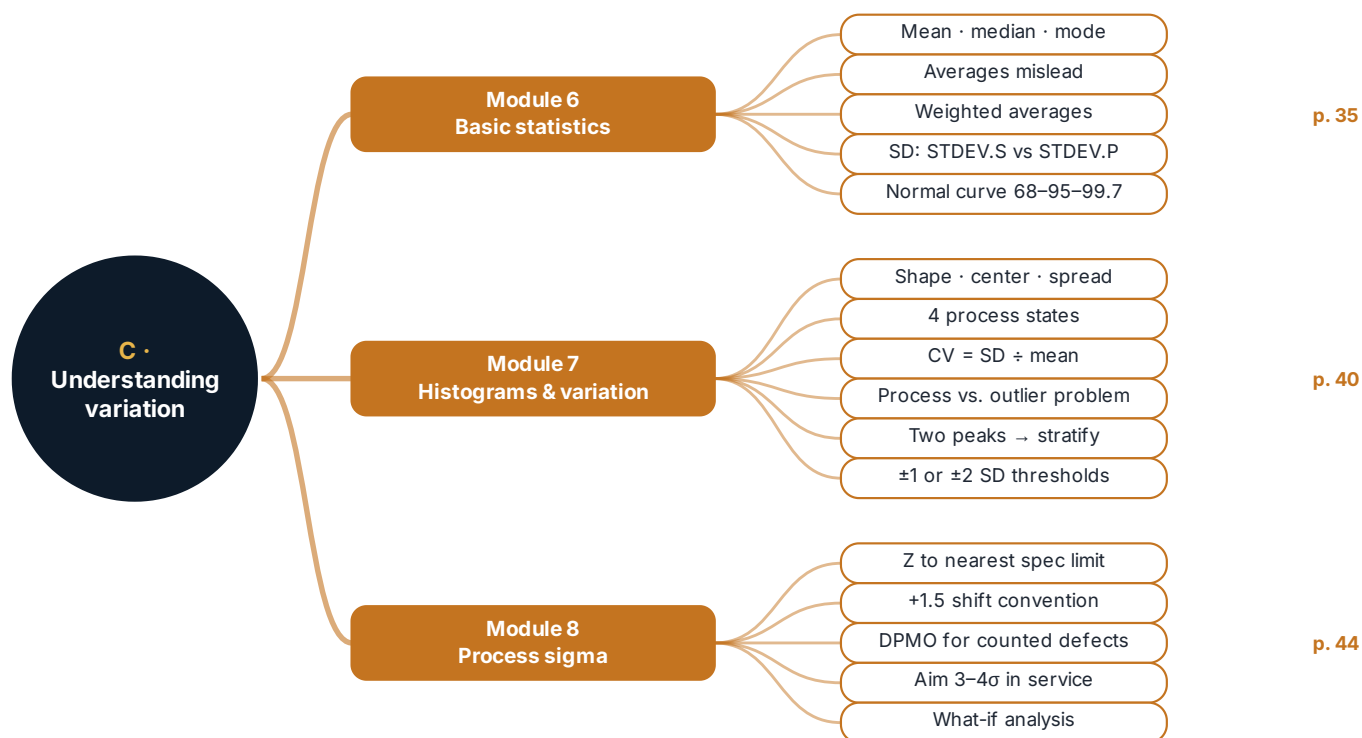


PART C

Understanding variation

Why averages mislead: basic statistics, histograms, the coefficient of variation and process sigma.

PART C · MODULES 6-8





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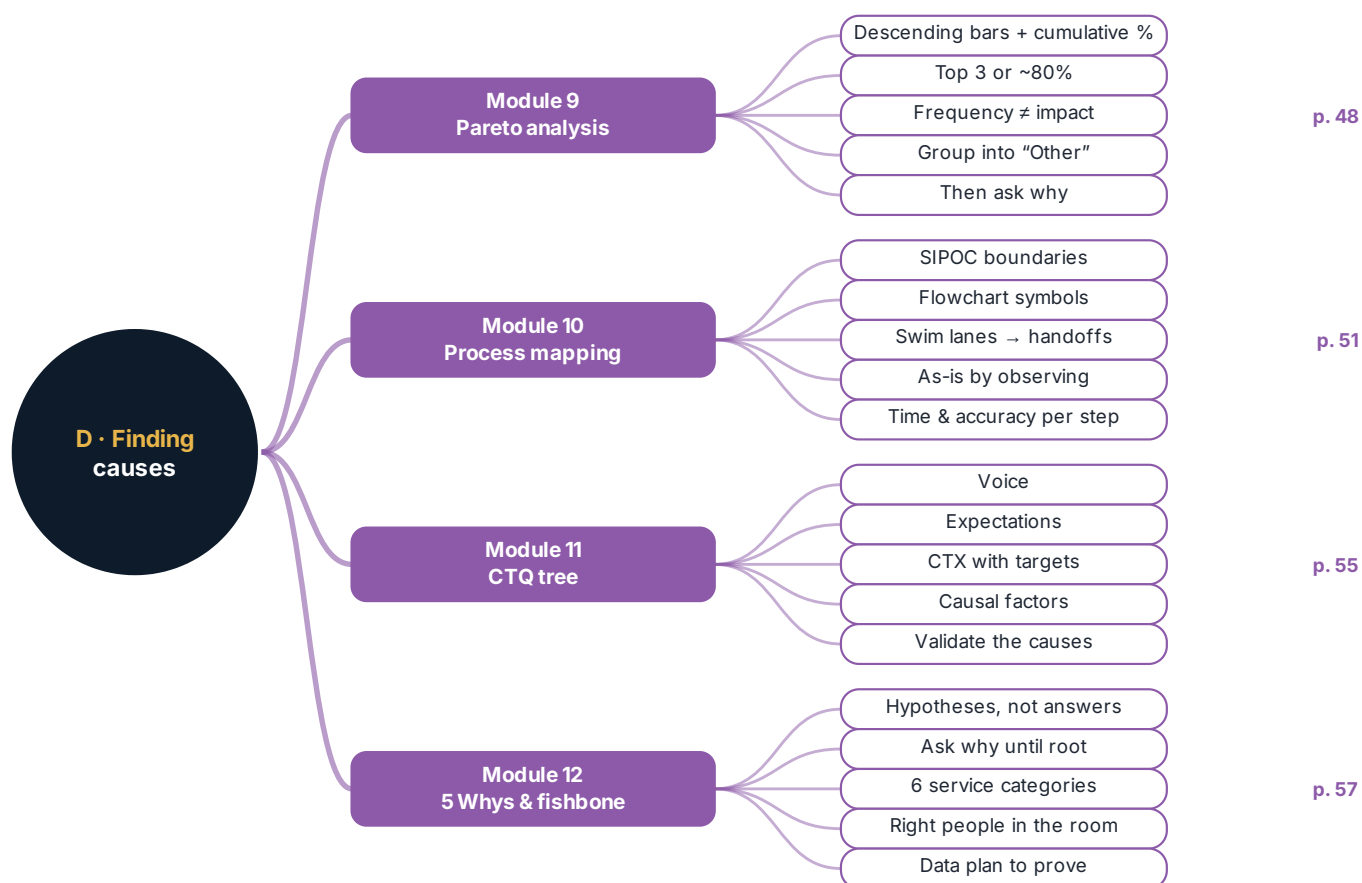


PART D

Finding causes

Pareto charts, process maps, CTQ trees and structured brainstorming to find likely causes and plan the data that proves them.

PART D · MODULES 9–12





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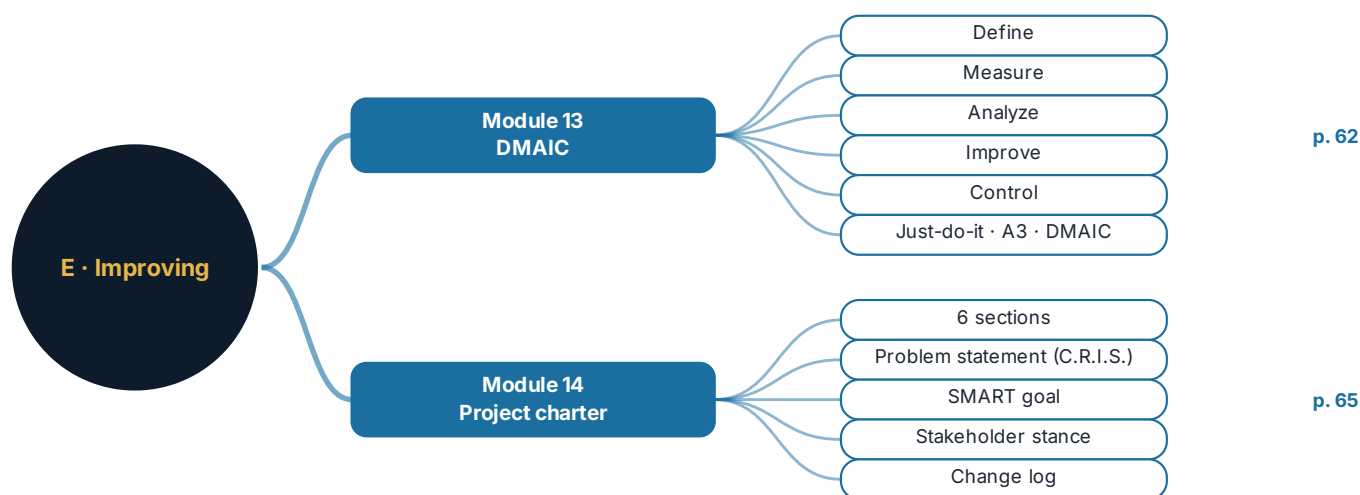


PART E

Improving

Framing and leading an improvement: DMAIC in the real world and a charter a sponsor will approve.

PART E · MODULES 13–14





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Turn these tools into results in your operation

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